Installation Instructions

BENDIX® AD-9® AIR DRYER UNIVERSAL CHECK VALVE KIT

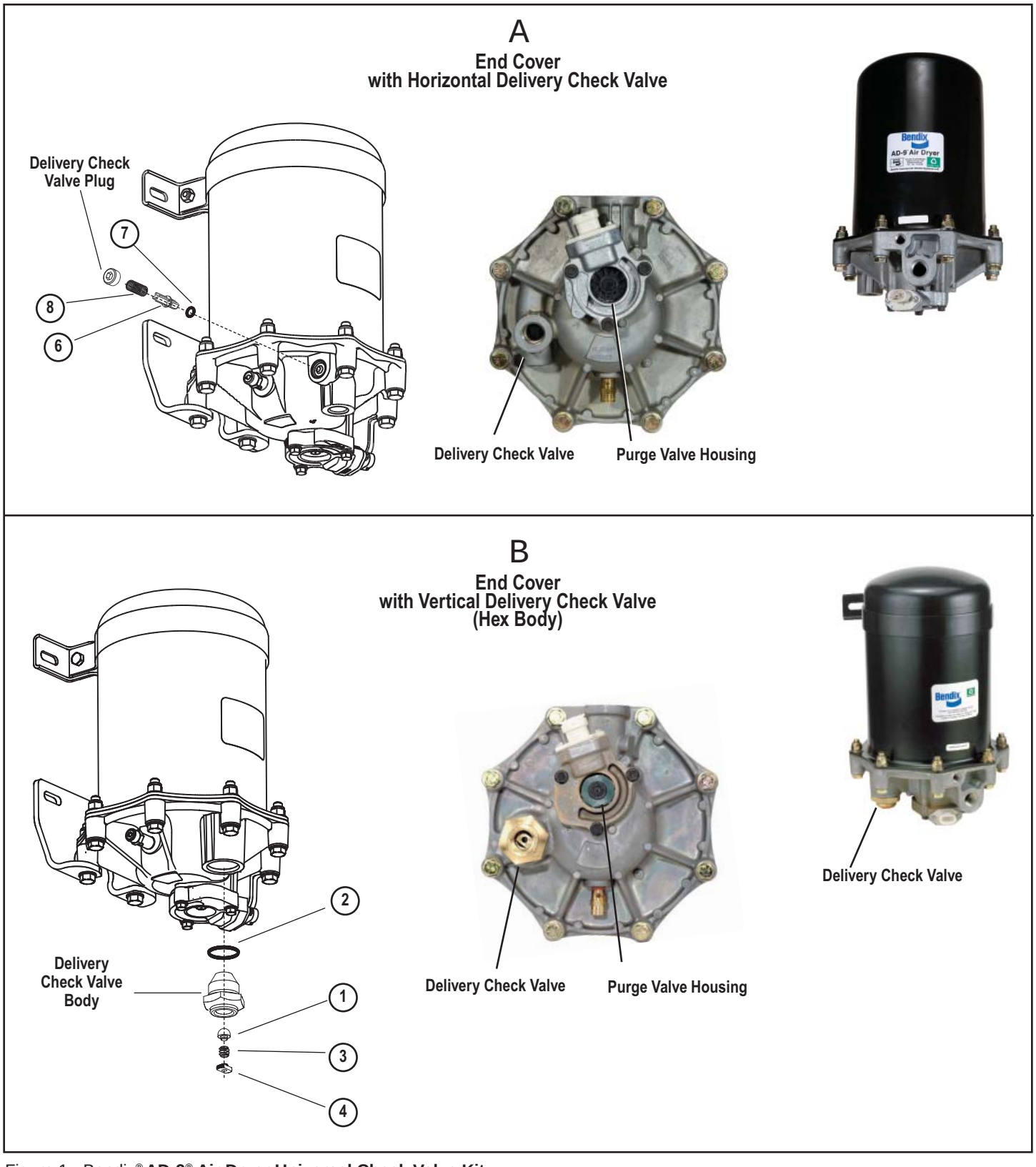
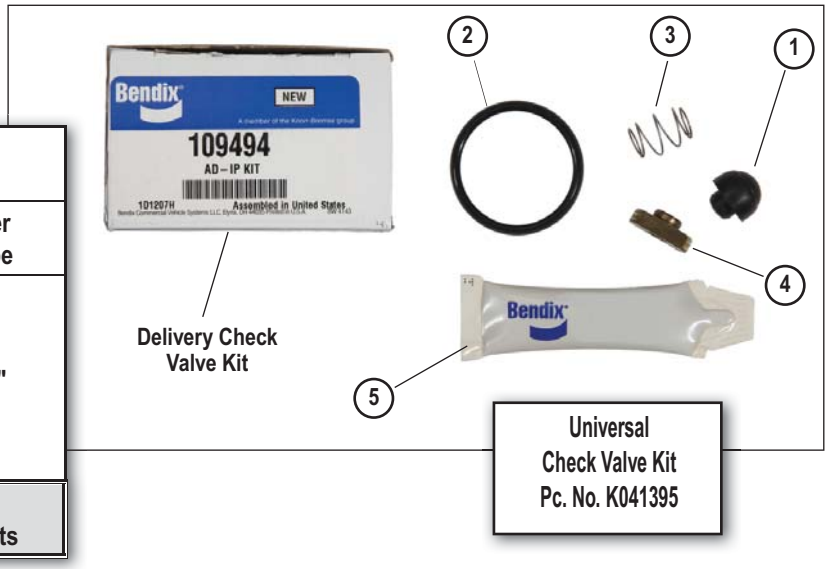


Figure 1 - Bendix® **AD-9® Air Dryer Universal Check Valve Kit**

Bendix® AD-9® Air Dryer Universal Check Valve Kit (K041395) Contents			
Item	Description	Qty	AD-9® Air Dryer End Cover Type
1	Check Valve	1	End Cover "B"
2	O-ring	1	
3	Spring	1	
4	Retainer	1	
5	Lubricant	1	
-	Delivery Check Valve Kit (109494)	1	End Cover A See Kit Contents



Delivery Check Valve Kit (109494) Contents			
Item	Description	Qty	Items Needed for End Cover Type "A"
6	Check valve Body (Long)	1	Retain
7	O-ring	1	Retain
8	Spring	1	Retain
9	Lubricant	1	Retain
10	Check valve Body (Short)	1	Not Needed
11	Conical Spring	1	Not Needed
12	Perforated Plate	1	Not Needed
13	Retaining Ring	1	Not Needed

The Bendix® AD-9® Air Dryer Universal Check Valve Kit contains the necessary components to service both Bendix® AD-9® end cover styles as well as the Bendix® AD-IP® air dryer. The components not used in this installation can be saved and used for the other installations.

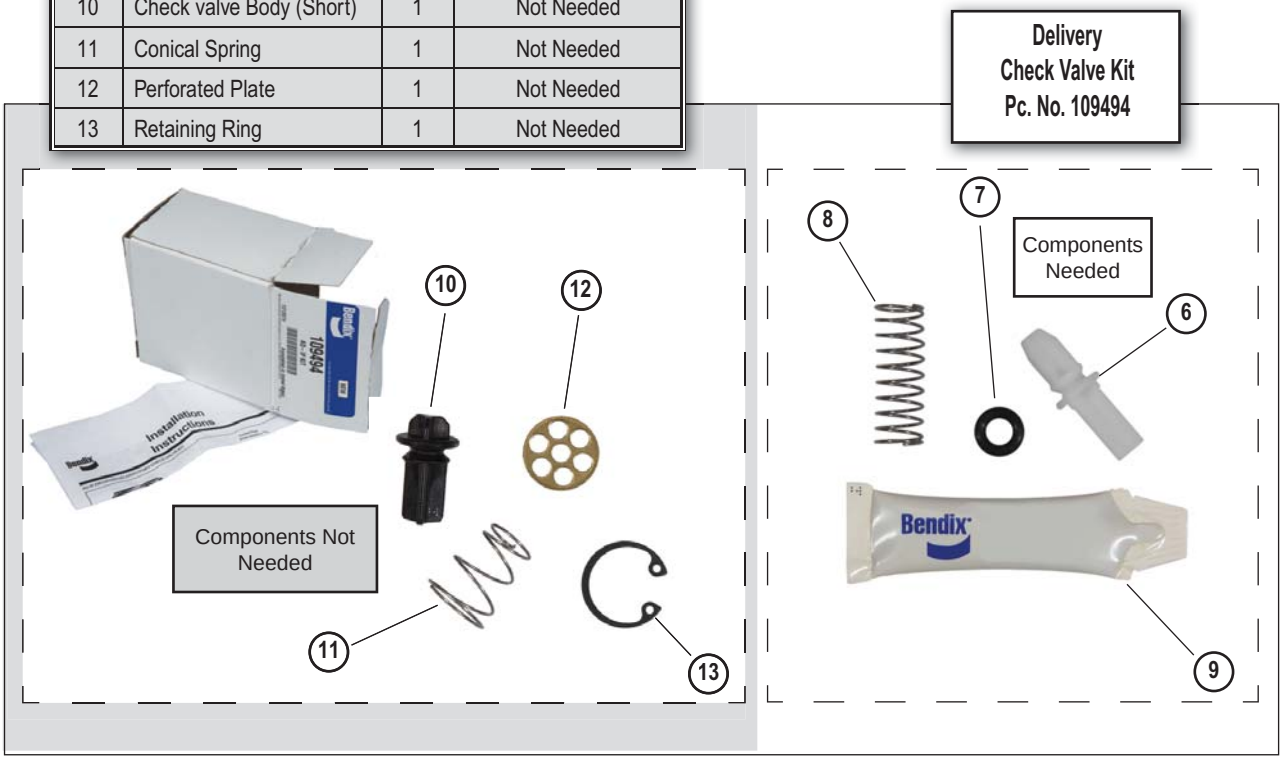


Figure 2 - **AD-9® Air Dryer Universal Check Valve Kit Check Valve Kit Contents**

This kit contains all the necessary components to service the Bendix® AD-9® air dryer delivery check valve. There are two different types of end covers as shown in Figure 1. Type **"A"** is the current production version and has a horizontal check valve. Type **"B"** is an earlier design and has a vertical check valve that can be identified by its large brass hex body in the bottom of the air dryer end cover.

This kit services both end cover styles. Once the installation is complete, the remaining components can be saved for installation in the other style of end cover. Note that the delivery check valve kit, contained within this kit, is the same delivery check valve kit used to service the Bendix® AD-IP® air dryer.

GENERAL SAFETY GUIDELINES

WARNING! PLEASE READ AND FOLLOW THESE INSTRUCTIONS TO AVOID PERSONAL INJURY OR DEATH:

When working on or around a vehicle, the following general precautions should be observed at all times.

1. **Park the vehicle on a level surface, apply the parking brakes, and always block the wheels. Always wear safety glasses.**
2. **Stop the engine and remove ignition key when working under or around the vehicle. When working in the engine compartment, the engine should be shut off and the ignition key should be removed. Where circumstances require that the engine be in operation, EXTREME CAUTION should be used to prevent personal injury resulting from contact with moving, rotating, leaking, heated or electrically charged components.**
3. **Do not attempt to install, remove, disassemble or assemble a component until you have read and thoroughly understand the recommended procedures. Use only the proper tools and observe all precautions pertaining to use of those tools.**
4. **If the work is being performed on the vehicle's air brake system, or any auxiliary pressurized air systems, make certain to drain the air pressure from all reservoirs before beginning ANY work on the vehicle. If the vehicle is equipped with a Bendix® AD-IS® air dryer system or a dryer reservoir module, be sure to drain the purge reservoir.**
5. **Following the vehicle manufacturer's recommended procedures, deactivate the electrical system in a manner that safely removes all electrical power from the vehicle.**
6. **Never exceed manufacturer's recommended pressures.**
7. **Never connect or disconnect a hose or line containing pressure; it may whip. Never remove a component or plug unless you are certain all system pressure has been depleted.**
8. **Use only genuine Bendix® brand replacement parts, components and kits. Replacement hardware, tubing, hose, fittings, etc. must be of equivalent size, type and strength as original equipment and be designed specifically for such applications and systems.**
9. **Components with stripped threads or damaged parts should be replaced rather than repaired. Do not attempt repairs requiring machining or welding unless specifically stated and approved by the vehicle and component manufacturer.**
10. **Prior to returning the vehicle to service, make certain all components and systems are restored to their proper operating condition.**
11. **For vehicles with Automatic Traction Control (ATC), the ATC function must be disabled (ATC indicator lamp should be ON) prior to performing any vehicle maintenance where one or more wheels on a drive axle are lifted off the ground and moving.**

CLEANING AND INSPECTION

1. Using mineral spirits or an equivalent solvent, clean and dry the outside of the air dryer.
2. When servicing, inspect the interior and exterior of all metal parts for severe corrosion, pitting and cracks. If this condition exists, replace the air dryer. Superficial corrosion and/or pitting on the exterior portion of the upper and lower body halves is acceptable.
3. Inspect all air line fittings for corrosion. Repair or replace any leaking or damaged lines or fittings. Clean all old thread sealant from the pipe threads.
4. Identify the end cover type (**"A"** or **"B"**) as shown in Figure 1.
5. Identify the components needed for the correct installation and set the others aside. See Figures 1 and 2 for components needed.
6. Be sure to replace all the components in the check valve with those provided in the kit.

CHECK VALVE KIT INSTALLATION

BENDIX® AD-9® AIR DRYER WITH A TYPE "A" END COVER

This maintenance kit does not require removal of the AD-9® air dryer from the vehicle or disconnection of the hoses, however if removal of the air dryer is necessary, adhere to the following caution.

Caution: While performing service on the AD-9® air dryer, it is not recommended that a clamping device (vise, C-clamp, etc.) be used to hold any die cast aluminum component as damage may result. To hold the body, install a pipe nipple in the supply port and clamp the nipple into a vise.

Disregard the instructions that are contained in the Delivery Check Valve Kit box. These instructions pertain to the Bendix® AD-IP® air dryer only.

DISASSEMBLY

1. Remove and retain the delivery check valve plug from the air dryer end cover. See Figure 1.
2. Remove and discard the spring (8), check valve body (6) and o-ring (7).
3. Using a clean rag, wipe the delivery check valve port clean. Clean any thread sealant from the pipe threads in the delivery check valve port.
4. Inspect for physical damage to the end cover delivery check valve port and the check valve seat in the port.
5. Inspect all air line fittings for corrosion and replace as necessary.

ASSEMBLY

1. Lubricate the o-ring (7) and the long check valve body (6) with the lubricant provided. Note: Use only the lubricant contained in this kit.
2. Install the o-ring (7) on the long check valve body (6). Push the o-ring (7) down, over the 3 guide lands until it is in the o-ring groove. Ensure the o-ring (7) is seated properly and not twisted.
3. Install the spring (8) on the white check valve body (6) so that the small coils of the spring slip over the check valve body.
4. Install the assembled long check valve body (6), o-ring (7), and spring (8) in the end cover delivery check valve port so that the o-ring (7) rests on its seat in the end cover and the spring (8) is visible.
5. Install the delivery check valve plug that was removed in step 1 of the disassembly, into the air dryer end cover. See Figure 5. Torque the plug to 130-170 inch pounds.
6. Before placing the vehicle back in service, perform THE OPERATION AND LEAKAGE TEST FOR A BENDIX® AD-9® AIR DRYER WITH A TYPE "A" END COVER.

OPERATION AND LEAKAGE TEST FOR A BENDIX® AD-9® AIR DRYER WITH A TYPE "A" END COVER

Check for proper operation. If the air dryer cycles rapidly review the installation procedures to ensure proper kit installation.

CHECK VALVE KIT INSTALLATION

BENDIX® AD-9® AIR DRYER WITH TYPE "B" END COVER

DISASSEMBLY

1. With the delivery line removed, use an adjustable wrench or 1-5/8" socket and remove the delivery check valve assembly.
2. Remove the outer o-ring (2) from the delivery check valve body.
3. Place the check valve on a bench with the hex end down. Use a hammer and punch to remove the retainer (4), spring (3) and check valve (1) from the check valve housing as shown in Figure 4. Discard items 1 through 4.

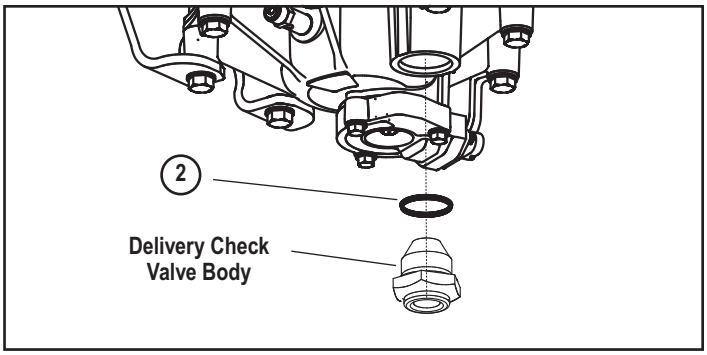


Figure 3 - **Check Valve Removal - Type "B" End Cover**

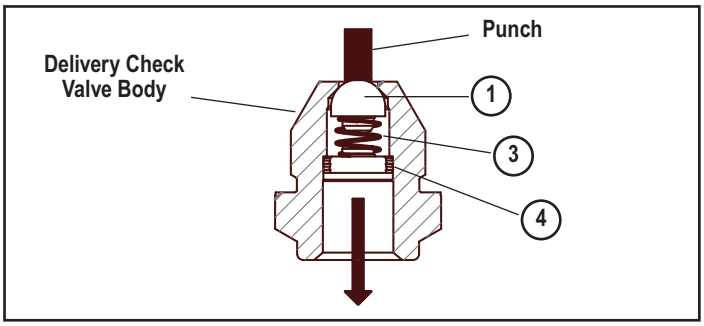


Figure 4 - **Check Valve Disassembly - Type "B" End Cover**

4. Inspect the delivery check valve body, and the delivery check valve port in the end cover where it was removed, for corrosion, pitting and cracks. If this condition exists, replace the delivery check valve body or end cover as needed.

ASSEMBLY

1. Assemble the spring (3) to the retainer (4) and check valve (1) as shown in Figure 4. Ensure the spring (3) is fully seated on the retainer (4) and the check valve (1).
2. Lubricate the entire spherical surface of the check valve (1) and bore chamfer of the check valve housing with the lubricant contained in this kit as shown in Figure 5. Note: Use only the lubricant contained in this kit.
3. Place the retainer (4), spring (3) and check valve (1) sub-assembly into the check valve housing. Press the retainer (4) using a 7/16" deep socket with a 3/8" drive, and a vise as shown in Figure 5.
4. Inspect the bore of the end cover. Make certain that the end cover passage is open and free of obstructions.
5. Inspect the threads in the end cover. Make certain they are clean.
6. Install the o-ring (1) on the outer body of the delivery check valve assembly. Ensure the o-ring (1) is seated properly and not twisted. Lubricate the o-ring (1) with the lubricant provided in this kit. Note: Use only the lubricant contained in this kit.

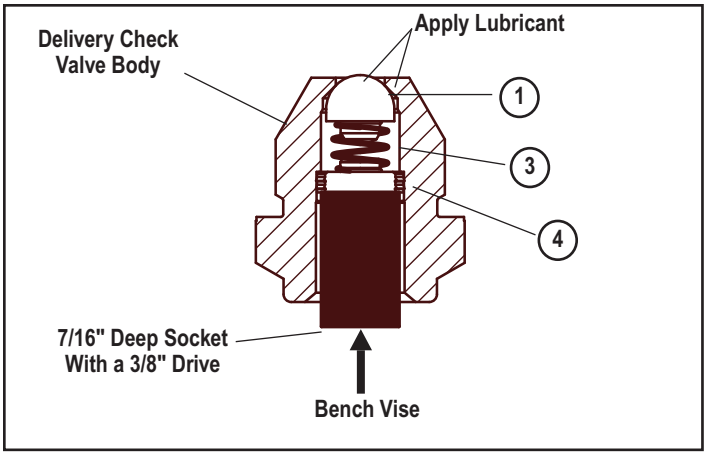


Figure 5 - **Check Valve Assembly**

7. Install the delivery check valve assembly into the end cover. Torque to 200-250 in. lbs.
8. Re-install the delivery line to the air dryer delivery port.
9. Before placing the vehicle back in service, perform the OPERATION AND LEAKAGE TEST FOR A BENDIX® AD-9® AIR DRYER WITH A TYPE **"B"** END COVER.
10. Set aside the remaining components for use in an AD-9® air dryer with a Type **"A"** end cover or a Bendix® AD-IP® air dryer.

OPERATION AND LEAKAGE TEST FOR A BENDIX® AD-9® AIR DRYER WITH A TYPE "B" END COVER

Test the delivery check valve by building the air system to governor cut-out and observing a test air gauge installed in the #1 reservoir. Check all lines and fittings leading to and from the air dryer for leakage and integrity. A rapid loss of pressure could indicate a malfunctioning delivery check valve. This can be confirmed by bench testing the delivery check valve.

To test the delivery check valve, bleed the brake system down and remove the check valve assembly from the end cover. Bench test the check valve by applying air pressure to the check valve and soaping the other end. Leakage should not exceed a 1" bubble in 1 second. Replace the check valve if excessive leakage is found.

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